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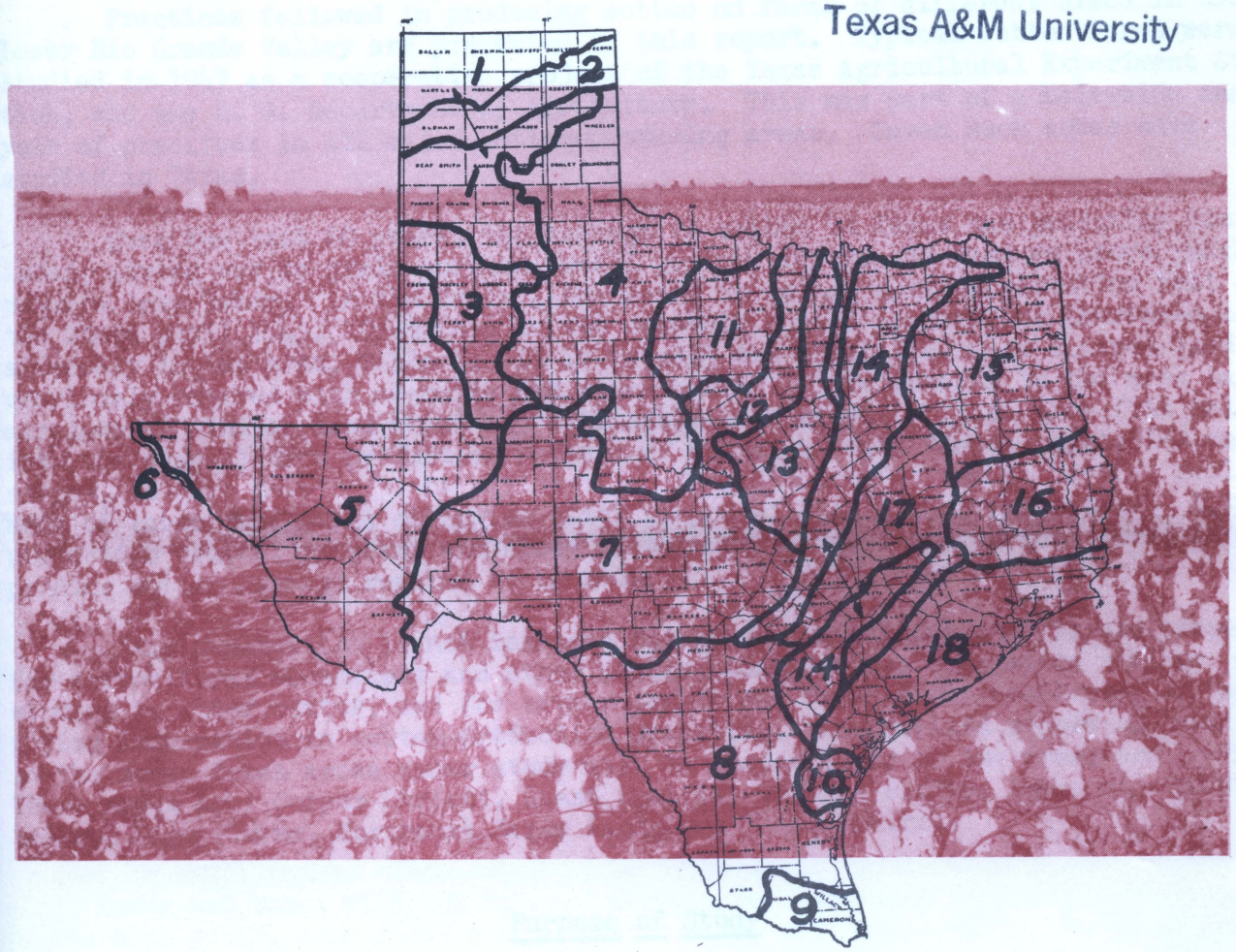

Texas Agricultural Experiment Station
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COTTON PRODUCTION PRACTICES IN THE LOWER RIO GRANDE VALLEY, 1947

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Practices followed in producing cotton on farms of different sizes in the Lower Rio Grande Valley are presented in this report. Typical cotton farms were studied in 1947 as a cooperative project of the Texas Agricultural Experiment Station, and the U. S. Department of Agriculture. This was part of a belt-wide analysis of practices in all major cotton-producing areas. Seven such areas were studied in Texas.

Over the last 20 years, the acreage of cotton in Texas has gradually diminished, giving way to grain sorghum, small grains, forage and pasture crops which require less labor. In the Valley, the trend in cotton acreage resembled that of the State until 1943. From then to the present, cotton acreage has increased considerably in the area, Table 1. It is usually the initial crop on cleared land previously covered with mesquite and other brush. There remains in the area large acreages of similar land which may ultimately be cleared. Cotton also fits well into the overall crop production pattern of the area, with winter vegetables and citrus, to give more complete utilization of land resources and to provide employment of labor during the otherwise slack period of late spring and summer. How production control programs and other factors will affect the current trend in expanding cotton acreage remains to be seen.

This publication is not intended for general distribution. It was prepared for agricultural economists and other professional workers engaged in similar studies in other states, and for county agents and farmers who cooperated in supplying information on cotton-production practices. A summarized report of practices in the seven Texas areas under study will be issued later to the press and public. These areas are: Corpus Christi, Coast Prairie, Rolling Plains, Lower Rio Grande Valley, High Plains, Northeast Sandy Lands and Black Prairie.

Purpose of Study

Almost everyone is interested in cotton. Not only producers, ginners, exporters and processors, but educators and eltimate consumers have an economic stake in the crop. This study portrays the usual practices followed and rates of performance by men and machines in the area for 1947. At a future date, it is proposed to conduct a similar survey and thus make possible some measure of change in the production brought about by the adoption of improved techniques, as well as the mechanical and chemical developments now in process in the field of agriculture.

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Table 1. Estimated cotton acreage, yield and production, 1928-48 1/

Year	Cotton acreage		Production 2/		Yield per acre	
	Area 9	State	Area 9	State	Area 9	State
	(1,000 acres)		(1,000 bales)		(Pounds)	
1928	263.6	17,409	81.7	5,105	149	141
1929	256.0	17,578	100.0	3,940	188	108
1930	247.3	16,689	80.7	4,037	157	116
1931	211.0	14,979	52.5	5,320	119	170
1932	92.4	13,592	29.9	4,500	155	159
1933	128.7	15,623	50.9	4,428	213 3/	189 3/
1934	142.2	10,685	69.4	2,401	234	108
1935	157.7	10,964	42.2	2,956	128	129
1936	203.2	12,080	68.7	2,933	162	116
1937	265.3	12,769	140.3	5,154	254	193
1938	243.4	9,163	115.0	3,086	227	165
1939	189.2	8,874	91.8	2,846	233	157
1940	193.5	8,873	94.8	3,234	235	180
1941	169.5	8,119	50.9	2,652	144	161
1942	194.0	8,430	94.0	3,038	233	177
1943	184.0	7,915	102.8	2,823	268	171
1944	211.5	7,114	119.0	2,646	270	179
1945	221.0	6,029	115.4	1,794	251	143
1946	257.5	6,283	208.1	1,669	388	128
1947	358.3	8,426	269.6	3,431	355	196
1948	513.0	8,793	334.2	3,150	299	176

1/ Acreage in cultivation, July 1.
2/ 500 lb. gross weight bales.
3/ Based on planted acres less acres removed in 1933 reduction program.

Procedure

A representative sample of farms on which cotton was grown was selected to provide a study of three size-groups. Farms with less than 20 acres of cotton were classed as small farms. Those with 20 to 99 acres in cotton were listed as medium-sized farms and those with 100 or more acres were designated as large farms, Table 2. In each group, some farms raised cotton under irrigation while others produced dry-land cotton. On most of the farms using tractors, 2-row tractor-drawn equipment was used. A few used larger equipment while only a small number in the sample still relied on horses or mules for power.

Farm Organization

In Table 3, the land, livestock and labor organization is summarized by the three size-groups. It may be noted that cotton farms in the area, regardless of size, support very few livestock. Consequently, there is little need for pastures and feed crops. Nearly half of the farms raise commercial vegetables to supplement the cash income from cotton--the major crop produced. On 43 percent of all farms,

Table 2. Acreage, production and tractor numbers, 1944 1/

Size group (acres in cotton)	Farms reporting		Acres of cotton		Bales produced		Percent of farms having tractors
	Total number	Percent of total	Total number	Percent of total	Total number	Percent of total	
Small - under 20	2,245	51.1	19,859	11.5	14,195	13.2	37.0
Medium - 20 to 99	1,610	36.6	55,764	32.2	36,526	34.0	76.4
Large - 100 & over	540	12.3	97,426	56.3	56,640	52.8	99.6
Total	4,395	100.0	173,049	100.0	107,361	100.0	59.1

1/ Source: Special Cotton Report, U. S. Census, 1945, and Circular 117, TAES.

Table 3. Land, livestock and labor organization by size of cotton enterprise 1/

Item	Size group 2/								
	Small			Medium			Large		
	Farms rptg.	Average	Usual range	Farms rptg.	Average	Usual range	Farms rptg.	Average	Usual range
	Pct.	Acres		Pct.	Acres		Pct.	Acres	
Land:									
Total land	100	33	15-50	100	98	40-100	100	280	140-400
Cropland	100	26	10-40	100	89	30-100	100	229	130-300
Other land	37	7	1-20	35	8	1-20	41	51	20-80
Crops:									
Cotton	100	11	5-15	100	46	25-70	100	165	125-275
Corn	26	1	2-6	32	3	2-10	35	10	5-25
Grain sorghum	14	1	4-8	33	19	6-50	18	17	10-65
Vegetables	43	6	3-12	42	9	6-25	53	18	15-25
Other crops	40	7	4-25	38	12	5-20	65	21	10-25
Double-crop	3	-	-	5	-	-	12	(2)	0-20
	Farms rptg.	Average	Usual	Farms rptg.	Average	Usual	Farms rptg.	Average	Usual
	Pct.	Number		Pct.	Number		Pct.	Number	
Livestock:									
Work stock	40	1.0	2	32	0.6	2	24	0.5	2
Milk cows	83	1.7	1	74	1.7	1	88	2.8	3
Other cows	9	0.1	1	7	0.1	1	29	3.8	10
All other cattle	20	0.4	2	32	0.9	2	53	8.3	15
Brood sows	11	0.2	1	9	0.1	1	29	0.5	1
Other hogs	29	1.1	6	30	1.0	6	41	2.2	4
Hens and pullets	86	26.5	40	68	35.4	50	71	52.6	75
Other livestock	11	-	-	11	-	-	18	-	-
Animal units	94	3.5	3	88	3.3	3	94	11.2	12

(continued on next page)

Table 3. Land, livestock and labor organization by size of cotton enterprise 1/ - continued -

Item	Size group 2/								
	Small			Medium			Large		
	Farms rptg.	Average	Usual	Farms rptg.	Average	Usual	Farms rptg.	Average	Usual
	Pct.	Number		Pct.	Number		Pct.	Number	
Labor:									
Operator:									
Families	100	1.0	1	100	1.1	1	100	1.0	1
Available workers	100	1.8	2	100	1.9	2	100	1.4	2
Cropper:									
Families	-	-	-	2	-	-	-	-	-
Available workers	-	-	-	2	-	-	-	-	-
Hired or wage hands:									
Families	20	0.3	1	51	0.8	1	65	2.1	4
Available workers	20	0.4	1	51	2.2	3	65	6.8	7

1/ "Usual range" (or usual number) in table relates only to those farms reporting.
2/ Based on size of cotton enterprise: small size--less than 20 acres; medium size--20 to 99 acres; large size--100 acres or over.

there was at least one family in addition to the operator's. About two-thirds of the large farms had such additional families. Most of the hoe labor and harvesting work was done by seasonal labor, Table 4. Wage rates commonly used are shown in Table 5. Land tenure is indicated in Table 6.

Table 4. Percentage of hired labor performed by workers not living on farm

Item	Size group		
	Small	Medium	Large
	Percentage of farms		
Cotton chopping:			
None hired	29	18	6
1-50 percent	11	18	35
51-99 percent	6	18	17
100 percent	54	46	42
Cotton picking:			
None hired	14	12	-
1-50 percent	3	7	23
51-99 percent	6	24	42
100 percent	77	57	35
Cotton snapping:			
None hired	80	66	53
1-50 percent	-	2	-
51-99 percent	-	9	35
100 percent	20	23	12
Regular farm work:			
None hired	71	62	59
1-50 percent	20	23	17
51-99 percent	6	12	12
100 percent	3	3	12

Table 5. Usual wage rates for specific operations

Item	Dollars
Cotton chopping:	
Rate per day	2.25
Rate per hour	0.25
Rate per acre	1.50
Picking, including hauling:	
Rate per 100 pounds seed cotton	2.25
Snapping, including hauling:	
Rate per 100 pounds seed cotton	2.00
Regular farm work:	
Rate per day	2.50
Tractor drivers:	
Rate per day	3.00

Table 6. Land tenure

Item	Size group			All farms
	Small	Medium	Large	
	Pct.	Pct.	Pct.	Pct.
Total land owned	61	45	48	48
Total land rented	39	55	52	52
Operators:				
Owners only	40	26	12	28
Tenants only	26	26	-	22
Combination owners-tenants	34	48	88	50

Planting and Spacing Practices

In Table 7, the planting and spacing practices are summarized by size-groups and for all farms. Most farmers bought planting seed and relied chiefly on the Stoneville variety. About half of the seed was delinted and more than a third was treated. Twenty-two pounds of seed per acre, whether delinted or not, was the usual seeding rate, regardless of the size of the cotton enterprise. Planting on 38-inch rows was a common practice. Hand chopping to 8-inch intervals was performed on about 4/5 of the farms, while nearly 1/5 planted to a stand and did not do any spacing.

Table 7. Cotton planting and spacing practices

Item		Size group			All farms
		Small	Medium	Large	
Total acres in sample	(Acres)	394	2650	2796	5840
Proportion of acres replanted	(Percent)	7	11	28	19
Proportion of farms using:					
Home-grown seed only	Do.	-	5	18	5
Purchased seed only	Do.	100	88	29	83
Both home-grown and purchased	Do.	-	7	53	12
Proportion of farms planting following:					
Stoneville only	Do.	83	65	53	68
Rowden only	Do.	-	9	12	6
DPL only	Do.	3	5	6	5
Delfos only	Do.	3	5	-	4
Coker only	Do.	6	2	6	4
Other or combinations	Do.	5	14	23	13
Proportion of seed delinted:					
Home-grown seed	Do.	-	23	16	17
Purchased seed	Do.	66	67	86	74
All planting seed	Do.	66	59	48	54
Proportion of seed treated:					
Home-grown seed	Do.	-	12	6	7
Purchased seed	Do.	63	57	48	55
All planting seed	Do.	63	50	25	38
Rate of seeding--delinted seed:					
Average quantity per acre	(Pounds)	23	22	23	22
Rate of seeding--non-delinted seed:					
Average quantity per acre	Do.	22	21	24	22
Method of spacing:					
No spacing	(Percent)	10	20	20	19
Hand chopped	Do.	90	80	75	78
Machine chopped	Do.	-	-	5	3
Usual spacing in row:					
Hand chopped	(Inches)	8	8	10	8
Machine chopped	Do.	-	-	7	7
Usual width of row	Do.	36	38	38	38

Fertilizer, Poisons and Defoliants

The use of commercial fertilizers was not a common practice in cotton production. Only 18 percent of the farmers interviewed used fertilizer of any kind and only 6 percent used a complete fertilizer. Side dressing with phosphates or nitrates was practiced on 13 percent of the farms; a few of these also used a complete fertilizer, Table 8.

Fewer than a fourth of the farmers used poison on their cotton in 1947. These men made application on 80 percent of their crop; a few covered their acreage more than one time. Calcium arsenate, DDT and sulphur--alone or in combinations--were used chiefly against flea hoppers and boll weevils. Table 9 indicates that regular poisoning was not an established practice on most farms.

Defoliation was experimented with by a few farmers in the area who were either interested in a machine harvester or in the possibilities of improving their hand-harvesting methods. For a defoliant, calcium cyanamid was used on 10 farms. Application was made, however, on only 345 acres.

Table 8. Fertilizer practices

Item		Size group		
		Small	Medium	Large
Farms	(Number)	35	57	17
Cotton planted	(Acres)	394	2628	2796
Proportion using complete fertilizer only:				
Farms	(Percent)	5.7	1.8	23.5
Acreage	Do.	6.1	3.4	10.0
Analysis				
Complete fertilizer:				
Proportion acreage using:				
4-12-4	(Percent)	-	3.4	10.0
5-10-5	Do.	6.1	-	-
Side dressing:				
Proportion acreage using:				
48% superphosphate	(Percent)	1.0	-	-
20% superphosphate	Do.	0.8	3.5	4.6
6-12-0	Do.	0.5	-	-
Ammonium nitrate	Do.	0.6	4.1	-
Liquid nitrates	Do.	-	-	0.2

Table 9. Number of years during last 10 poison used

Number of years	Size group		
	Small	Medium	Large
	Percentage of farms		
0-3	25.7	22.8	11.8
4-6	20.0	10.5	11.8
7-10	20.0	26.3	64.7

Machinery

Borrowing, exchange and frequent use of custom machines made inventories appear unbalanced. On the smaller farms especially, these practices considerably reduced the investment in field machinery. Table 10 shows a summary of the machinery reported on farms in the various size-groups. The average as well as the usual inventory is shown. The number and age of tractors are given in Table 11.

Table 10. Field machinery

Item	Size group								
	Small			Medium			Large		
	Farms rptg.	Average age	Usual	Farms rptg.	Average age	Usual	Farms rptg.	Average age	Usual
	Pct.	Number		Pct.	Number		Pct.	Number	
Pickups, 1/2 - 3/4 T.	20	0.2	-	30	0.3	-	59	0.7	1
Trucks, 1½ - 2 T.	14	0.1	-	21	0.2	-	35	0.5	-
Tractors	69	0.8	1	96	1.5	1	100	2.4	2
Breaking plows	34	0.4	-	56	0.6	1	76	1.2	1
Middle busters or listers:									
4-row	-	-	-	4	-	-	24	0.3	-
2-row	51	0.6	1	86	1.1	1	100	1.8	2
1-row	9	0.1	-	3	-	-	-	-	-
Disks:									
Tandem	43	0.5	1	74	0.8	1	94	1.4	1
Offset	11	0.1	-	18	0.2	-	24	0.3	-
Section harrows	43	0.4	-	65	0.7	1	76	1.0	1
Planters:									
4-row	-	-	-	6	0.1	-	29	0.3	-
2-row	51	0.5	1	89	1.1	1	94	1.7	2
1-row	37	0.5	-	5	-	-	-	-	-
Cultivators:									
4-row	-	-	-	7	-	-	24	0.2	-
2-row	46	0.5	1	93	1.1	1	100	1.9	2
1-row	37	0.5	-	11	0.1	-	6	0.1	-
Mowers	14	0.1	-	7	0.1	-	24	0.2	-
Combines, 2-row	3	-	-	3	-	-	6	0.1	-
Cotton poison machines	20	0.2	-	54	0.6	1	65	0.7	1
Stalk cutters, 2-row	29	0.3	-	58	0.6	1	76	0.8	1
Trailers	3	-	-	16	0.2	-	18	0.2	-
Row binders	-	-	-	7	0.1	-	12	0.1	-

Table 11. Number and age of tractors

Size group	Age in years							
	1 - 3		4 - 6		7 - 9		10 and over	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Small	9	33	6	21	6	21	7	25
Medium	29	34	14	16	18	21	25	29
Large	9	23	13	33	7	17	11	27
All farms	47	31	33	21	31	20	43	28

Cotton Yield, Method of Harvesting and Turn-out

Table 12 includes data on average yield, method of harvesting and gin turn-out of lint and seed on farms in the three size-groups.

Power and Labor Requirements

Preliminary analysis of the data indicated no appreciable differences in labor and power requirements on farms in the various size-groups heretofore listed. There were, however, significant differences in some of the requirements on irrigated and dry-land farms. To simplify the presentation, only those farms using 2-row tractor equipment are included in Table 13. Eighty percent of the farms covered fall in this category.

The use made of tractor-drawn equipment is presented in Table 14.

Other Major Crop Practices

As indicated in Table 3, grain sorghum, corn and commercial vegetables may be considered as secondary crops to cotton on the farms covered in this report. On some individual farms cotton was of relatively less importance than one or more of the crops mentioned above. Records were obtained on 9 farms for practices followed in producing grain sorghum; 9 producing corn; 19 producing tomatoes; and 6 producing cabbage.

Table 12. Average cotton yield, method of harvesting and gin turn-out

Item		Size group			All farms
		Small	Medium	Large	
Acre yield of lint	(Pounds)	378	392	384	387
Harvesting practices:					
Bales picked	(Percent)	94	90	87	89
Bales hired picked	Do.	94	98	100	98
Bales snapped	Do.	6	10	13	11
Bales hired snapped	Do.	100	93	96	95
Picked cotton:					
Seed cotton per 500 lb. bale	(Pounds)	1512	1509	1488	1506
Cotton seed per 500 lb. bale	Do.	902	914	915	911
Turn-out, lint	(Percent)	33	33	34	33
Turn-out, seed	Do.	60	61	61	61
Snapped cotton:					
Seed cotton per 500 lb. bale	(Pounds)	1991	2068	1937	2026
Cotton seed per 500 lb. bale	Do.	916	928	921	924
Turn-out, lint	(Percent)	25	24	26	25
Turn-out, seed	Do.	46	45	47	46

Table 13. Usual labor and power requirements per acre with 2-row, tractor-drawn equipment on irrigated and dry-land cotton farms

Operation	Irrigated cotton			Dry-land cotton		
	Times over	Hours per acre		Times over	Hours per acre	
		Man	Tractor		Man	Tractor
Seedbed preparation:						
Breaking (Mold board)	1.0	1.57	1.57	1.0	1.46	1.46
Bedding (2-row buster)	3.0	1.97	1.97	2.0	1.34	1.34
Disking (6-7 foot disk)	2.5	1.43	1.43	2.5	1.62	1.62
Harrowing (2-sections)	1.0	0.33	0.33	1.0	0.51	0.51
Leveling, bordering, etc.	-	1.45	1.45	-	-	-
Irrigating	1.0	2.60	-	-	-	-
Planting (2-row planter)	1.2	0.74	0.74	1.1	0.70	0.70
Cultivating (2-row cultivator)	5.0	3.36	3.36	4.0	2.31	2.31
Irrigating	1.5	4.14	-	-	-	-
Poisoning (6-row duster)	1.0	0.08	0.08	-	-	-
Chopping and hoeing	3.0	17.72	-	2.5	14.10	-
Total before harvest	-	35.39	10.93	-	22.04	7.94
Harvesting:						
Picking	2.0	58.55	-	2.0	25.35	-
Snapping	1.0	3.70	-	1.0	7.47	-
Hauling	-	3.00	3.00 1/	-	1.50	1.50 1/
Total harvesting	-	65.25	3.00	-	34.32	1.50
Cut or turn stalks	1.0	0.52	0.52	1.0	0.52	0.52
Total - All operations	-	101.16	14.45	-	56.88	9.96

1/ Tractor, truck or automobile furnished power for hauling.

On three farms, the grain sorghum crop was harvested by combining; three others used binders; and the remaining farms headed by hand and had the crop custom-threshed.

On the farms growing corn, 37 percent of the acreage was used for the production of roasting ears.

Some of the practices followed in producing these other major crops are shown in Table 15.

Table 14. Use of equipment

Operation and implement used	Proportion of farms reporting	Proportion of cotton acreage covered	Times over	Number machines in sample	Acres covered per 10 hr. day	Hours per acre once over: Man	Hours per acre once over: Tractor
	Percent	Percent	No.	Number	Acres	Hours	
Breaking:	30.2	22.7	1.2	36	-	-	-
Tractor equipment:	28.4	22.2	1.0	30	-	-	-
3-bottom mold-board plow	0.9	1.5	1.0	2	9	1.11	1.11
2-bottom mold-board plow	20.2	12.9	1.2	22	7	1.37	1.37
5-foot oneway	3.7	3.6	1.3	4	14	0.72	0.72
Other breaking plows	3.6	4.2	1.0	6	-	-	-
Horse equipment:	1.8	0.5	2.0	2	-	-	-
1-bottom mold-board plow	1.8	0.5	2.0	2	2	5.00	10.00 1/
Bedding:	98.9	94.4	2.0	109	-	-	-
Tractor equipment:	93.4	93.1	2.1	102	-	-	-
4-row middle buster	2.7	6.5	2.3	3	32	0.31	0.31
3-row middle buster	2.7	3.5	1.7	3	26	0.49	0.49
2-row middle buster	86.2	82.7	2.8	94	16	0.63	0.63
1-row middle buster	1.8	0.4	1.5	2	6	1.67	1.67
Horse equipment:	5.5	1.3	1.7	7	-	-	-
1-row middle buster	5.5	1.3	1.7	7	3	3.03	9.10 1/
Disking:	70.6	71.9	2.2	80	-	-	-
Tractor equipment:	68.8	71.2	2.2	78	-	-	-
6-8 foot tandem disk	62.4	68.0	2.3	71	19	0.53	0.53
4-5 foot tandem disk	6.4	3.2	1.9	7	16	0.63	0.63
Horse equipment:	1.8	0.7	3.0	2	-	-	-
Tandem disks	1.8	0.7	3.0	2	5	2.00	4.00 1/
Harrowing:	16.4	18.3	1.0	18	-	-	-
Tractor equipment:	16.4	18.3	1.0	18	-	-	-
4-sections	2.7	1.4	1.0	3	49	0.20	0.20
3-sections	6.4	11.5	1.0	7	31	0.33	0.33
2-sections	6.4	5.2	1.0	7	28	0.36	0.36
Fertilizing:	7.3	9.2	1.0	10	-	-	-
Tractor equipment:	6.4	8.3	1.0	8	-	-	-
4-row distributor	1.8	5.8	1.0	3	37	0.27	0.27
2-row distributor	3.7	2.1	1.0	4	20	0.51	0.51
Planting:	100.0	100.0	1.2	115	-	-	-
Tractor equipment:	96.3	98.5	1.2	107	-	-	-
4-row planter	5.5	10.1	1.0	7	33	0.30	0.30
2-row planter	85.3	87.3	1.2	98	16	0.63	0.63
Horse equipment:	7.4	1.9	1.2	8	-	-	-
1-row planter	5.5	1.5	1.3	6	4	2.50	2.50 1/
Harrowing:	35.7	34.3	1.2	40	-	-	-
Tractor equipment:	32.1	33.3	1.2	36	-	-	-
4-sections	1.8	1.3	1.7	2	40	0.25	0.25
3-sections	10.1	23.5	1.1	12	29	0.35	0.35
2-sections	19.3	8.1	1.1	21	23	0.44	0.44
Horse equipment	3.6	1.0	1.0	4	6	1.70	3.40 1/

(continued on next page)

Table 14. Use of equipment
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Operation and implement used	Proportion of farms reporting	Proportion of cotton acreage covered	Times over	Number machines in sample	Acres covered per 10 hr. day	Hours per acre once over: Man	Hours per acre once over: Tractor
	Percent	Percent	No.	Number	Acres	Hours	
Cultivating:	100.0	100.0	4.1	119	-	-	-
Tractor equipment:	89.0	97.2	4.1	107	-	-	-
4-row cultivator	5.0	9.0	4.5	7	36	0.28	0.28
2-row cultivator	84.0	88.0	4.1	98	17	0.57	0.57
Horse equipment	11.0	2.8	4.3	12	5	1.85	3.70 1/
Fertilizing:	5.4	6.5	1.0	6	-	-	-
Tractor equipment:	5.4	6.5	1.0	6	-	-	-
2-row distributor	3.6	3.7	1.0	4	23	0.44	0.44
Other distributors	1.8	2.8	-	-	-	-	-
Poisoning:	22.9	22.6	1.2	-	-	-	-
Tractor-drawn dusters	11.9	12.5	1.3	13	-	-	-
Hand dusters	3.7	0.5	1.0	4	-	-	-
Plane	7.3	9.6	1.0	8	-	-	-
Hauling:	100.0	100.0	-	-	-	-	-
Contracted	61.5	54.9	-	-	-	-	-
Not contracted	38.5	45.1	-	-	-	-	-
Stalk disposal:	100.0	100.0	-	-	-	-	-
2-row stalk cutter	43.1	32.6	1.0	47	21	0.48	0.48
2-row S.C. and 2-row disk	30.3	40.9	1.0	34	16	0.63	0.63
2-row disk	22.0	19.2	1.0	24	18	0.55	0.55

1/ Horse hour requirements.

Table 15. Other major crop practices

Item	Other crops			
	Grain sorghum	Corn	Tomatoes	Cabbage
Number farms reporting	9	9	19	6
Acreage planted	795	205	400	69
Acreage harvested	699	205	360	68
Range in acreage harvested	30-280	5-120	3-50	6-20
Average acres per farm	88	23	21	11
Average yield per acre	1,060 lbs.	58 bu.	5,590 lbs.	6.8 tons
5-year average yield	1,500 lbs.	61 bu.	5,990 lbs.	8.2 tons
Percentage usually sold	83	95	100	97
Planting rate per acre	6 lbs.	9.6 lbs.	1 lb. seed	10-12 M. plants
Percentage seed (plants) bought	100	100	100	100
Number farms treating seed	1	7	7	-
Number farms using fertilizer	1	4	14	5
Number farms using poison	-	-	5	4
Total acreage fertilized	30	169	336	54
Fertilizer applied per acre (lbs.)	100	150	233	220
Total acreage poisoned	-	-	137	42
Poison applied per acre (lbs.)	-	-	18	50

Conclusion

Although the acreage of cotton in the Lower Valley is now only about 6 percent of the State total, it is significant that it has continued to expand. Clearing the land in the area has been accelerated since the war and it is likely to continue for some time. Moreover, irrigation planned for the area as a result of the International Water Agreement assured the importance of cotton in the area. In this winter-vegetable and citrus area, cotton fits well into a good farm plan. Machinery and labor requirements of cotton dovetail nicely with those of grain sorghum or corn and commercial vegetable production. Ginners are beginning to install modern equipment that is necessary to handle cotton harvested by hand snapping or by mechanical pickers. So, all in all, prospects for cotton in the area appear bright. In making this statement, it is presumed that any crop control program will not adversely affect the relative position of cotton in the area as compared with other areas.

Several methods may be employed by individual growers to increase their returns from the crop. The purchase and use of treated seed; proper land-leveling and adequate drainage on irrigated farms; good seedbed preparation; timeliness of cultivation--all of the approved production practices will pay off in this area as is the case elsewhere. Although hand labor is and probably will continue to be relatively abundant and cheap, farmers may well consider ways and means to reduce labor costs. Table 13 shows that hoeing and harvesting require more than 80 percent of all the labor used in cotton production on those farms where 2-row, tractor-drawn equipment is used. Chopping can be reduced by check-row planting, hill dropping or planting to an adequate stand. Mechanical choppers and flaming attachments on the cultivator are used successfully on many farms in other areas. Hoe labor can be minimized by good seedbed preparation, pre-planting cultivation, proper and timely use of cultivating equipment, including various "scratchers" and rotary hoe attachments. Weed control by the use of chemicals may develop into a practical operation.

In substituting machines for hand labor, it is necessary to consider investment and operating costs, because net returns cannot be increased by reducing labor expenditures in exchange for too much or too high-priced machinery. In other words, the size of the cotton enterprise should be large enough to justify the purchase of labor-saving machinery. Otherwise, it may be more economical to continue using hand labor or to shift to some other crop. Cooperative use of some equipment or reliance on custom work may be an alternative.

Under terms of the pink bollworm control program, cotton stalks must be destroyed by a pre-determined date--usually around the middle of September. The development of a satisfactory defoliant will be necessary before mechanical harvesting can be fully utilized. At present, a 1-row picker only is available commercially. This type appearsinadequate to meet the farmer's need to harvest his crop within the rather short interval between the time when most of the cotton matures and the time when the stalks must be destroyed. It seems probable that completely mechanized harvesting in this area must await development of a practical defoliant as well as the perfection of a 2-row picker that will harvest the entire crop. Even then, such a picker will have to be priced at a figure low enough to assure a net saving as compared with hand harvesting if it is to become popular.

Initial cost and operating costs of harvesters, as well as the value of the lint produced are factors that must stand comparison with hand-harvesting. For instance, on the irrigated farms studied, harvesting required about 65 hours per acre. At the 1947 rate of about 45 cents an hour, this would cost around $30. Operators

have estimated that 7.5 acres per day can be covered with a 1-row machine picker. At this rate, assuming that the crop could be harvested by going over the field twice and that an extra man would be needed for hauling, it would require about 5 hours per acre--a difference of 60 hours, or about $27. Then, there would be the cost of fuel, oil, repairs, interest and depreciation on a $7,600 machine (over $8,000 in 1949) as well as some waste of lint incident to machine harvest versus hand harvest. A machine operator will have to provide the needed trailers which usually are supplied along with picking crews. Moreover, the cost of defoliation and a possible loss in grade due to rougher harvesting as well as a somewhat later harvesting date, suggest some items that will affect the apparent "saving" of $27, mentioned above.

Hand-picking rates are lower in 1949 than they were in 1947 and the operating costs as well as the purchase price of 1-row pickers have increased. Both of these factors favor harvesting by hand methods.

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